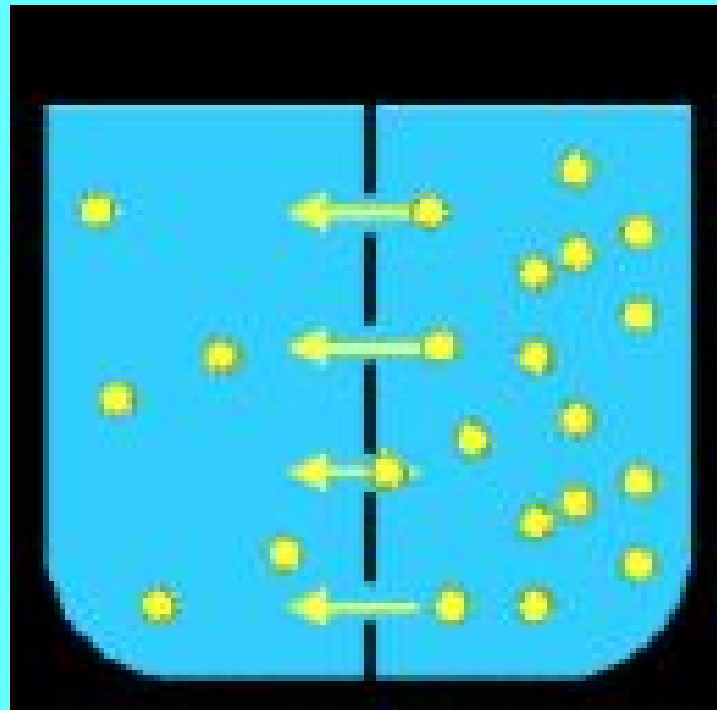


Cellular Transport



Define *diffusion*.

Diffusion is the movement of particles from an area of higher concentration to an area of lower concentration.



Concentration gradient

❖ Concentration gradient is the difference of particles between the outside and inside of the cell membrane.

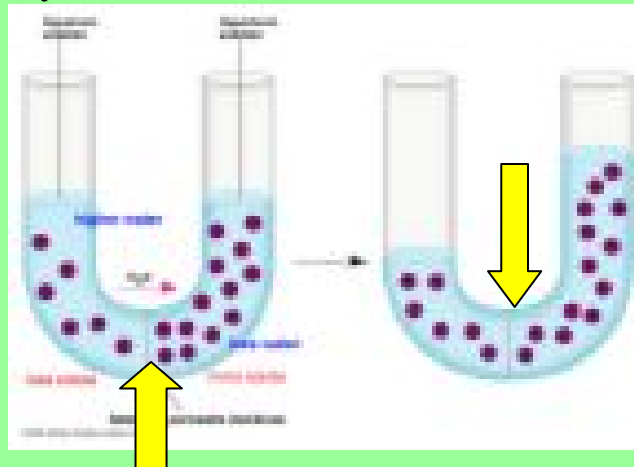
"Down" the gradient...means High to Low

"*Up*" the gradient...means *Low* to *High*



Define *osmosis*.

- ❖ Osmosis is an example of **passive transport**.
- ❖ It is the diffusion of **water** across a **selectively permeable membrane**.



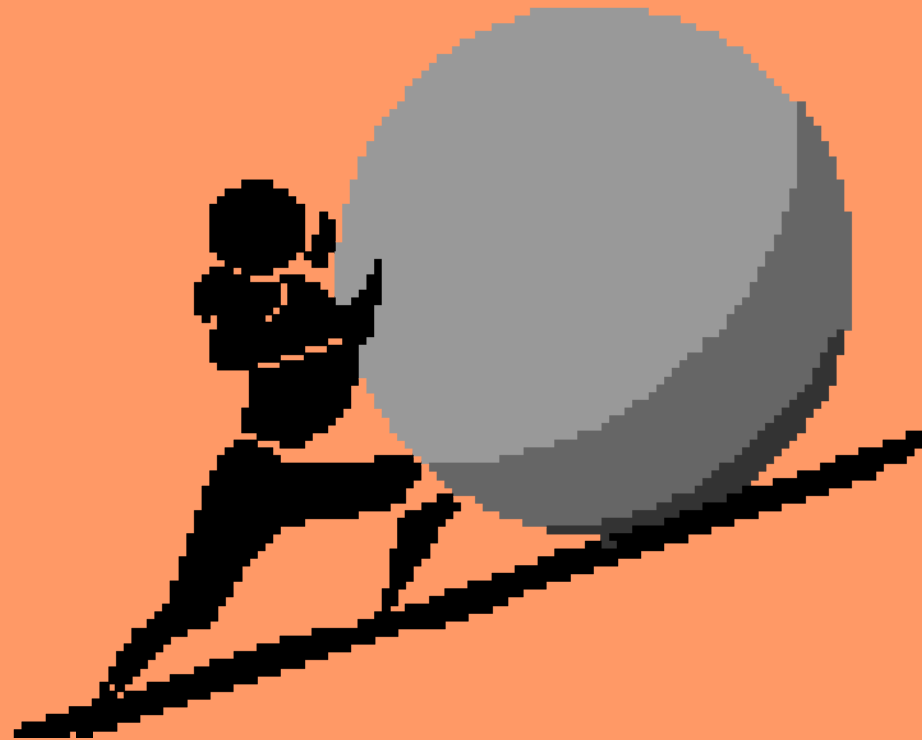
💡 Why is it important for cell to keep undergoing diffusion and osmosis?

❖ Pumping blood

❖ Keep cells hydrated

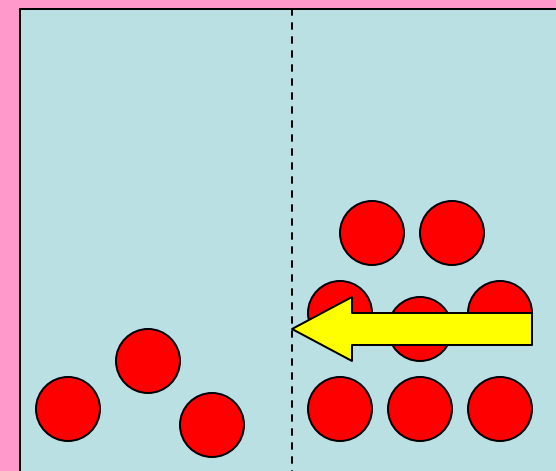
❖ Maintain homeostasis

💡 Osmosis comes from the Greek word osmos meaning *to push*.



💡 How does osmosis work?

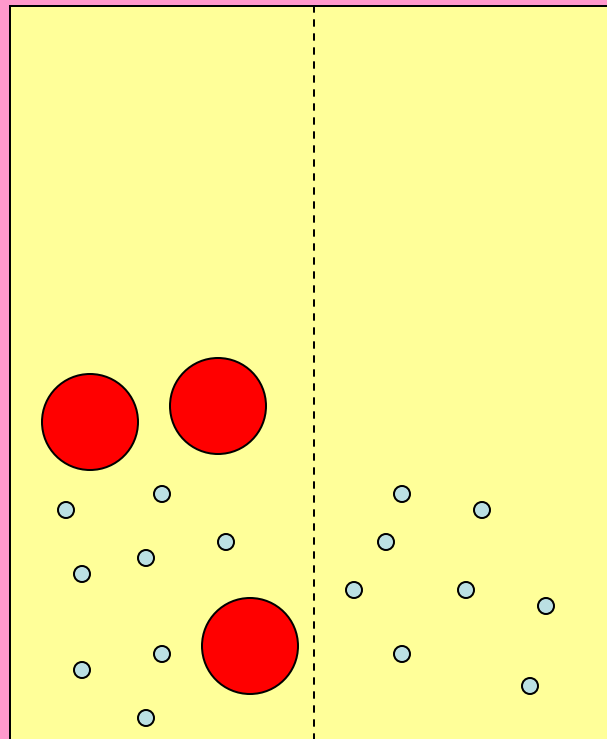
- ❖ Water always moves to the higher molecule (salt, sugar) concentration
- ❖ Water will continue to move until equilibrium is reached
 - ▶ *homoestasis*



cell membrane

💡 What is **selectively permeable**?

- ❖ Only allows **certain specific molecule** to pass in and out of the cell membrane.



💡 Why do farmers market **mist** their fruits and vegetables several times throughout the day.

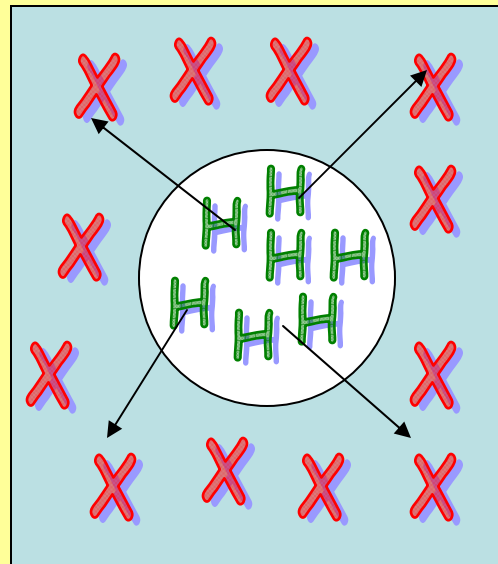
- ❖ Keep freshness

- ❖ Cell size increases

- ❖ Better appearance

- ❖ **Hypotonic**

💡 Name the **osmosis environment** that would occur to your red blood cells if you and your friends ship wrecked far out in the ocean.




- ❖ Water moves out of cell.
- ❖ Cell size shrinks
- ❖ **Hypertonic**

How does large food particles digest in your body?

 Define *endocytosis*


→ Process by which a cell surrounds and **takes in** material from its environment.

 What organelle (cell part) does endocytosis occur in plants?

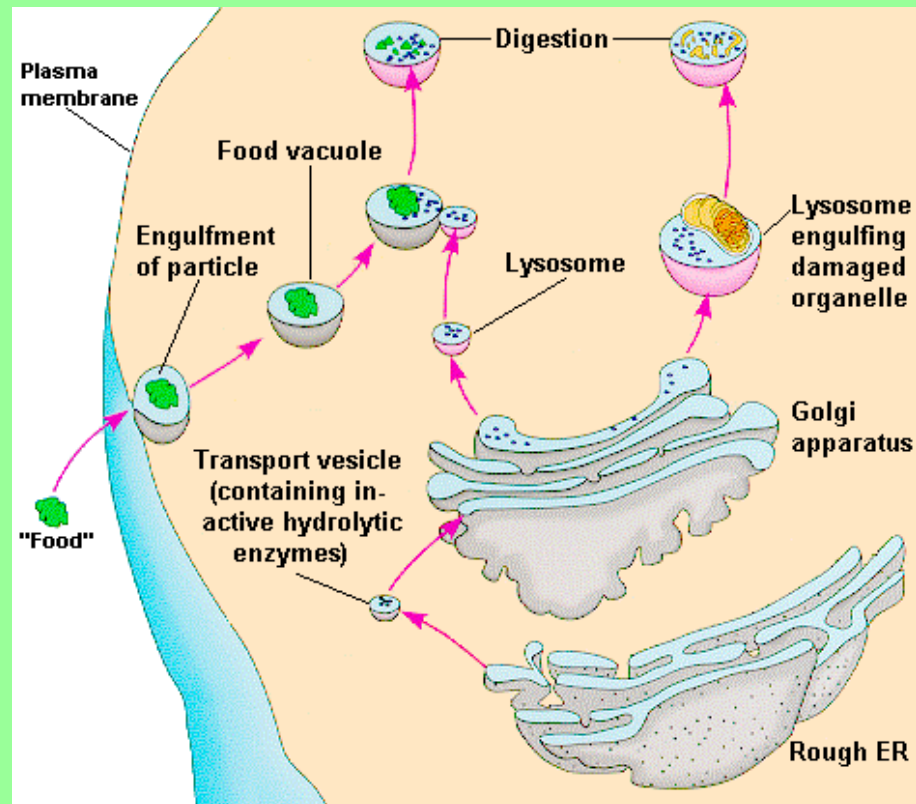
→ **Vacuole**




How does large food particles digest in your body?

 What organelle (cell part) does endocytosis occur in animals?

→ **Lysosomes**



 How does large food particles digest in your body?

 Define *exocytosis*

→ Process that uses expulsion or secretion of materials from a cell.

 What is usually removed by exocytosis?

→ Expels waste and move hormones

 Do endocytosis and exocytosis require energy?

Yes

Passive Transport versus Active Transport



Define *passive transport*.

- ▶ The movement of molecules and water across the cell membrane *without* using energy.



Define *active transport*.

- ▶ The movement of molecules against the concentration gradient that *uses* energy.

Passive Transport versus Active Transport

| Example of Transport | Involvers Transport Carrier? | Direction of Movement? | Requires Energy? | Type of Transport |
|-----------------------|---|---------------------------------|------------------|-------------------|
| Simple Diffusion | NO | Down the gradient High → Low | NO | Passive Osmosis |
| Facilitated Diffusion | Yes Carrier Proteins in Protein Channels or Ion Channels | Down the gradient High → Low | NO | Passive |
| Active | Yes Carrier Proteins | Up the gradient Low → High | YES | Active |